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ABSTRACT

The purpose of this paper is to summarize the issues and principal findings of research on homogeneous and heterogeneous ability grouping, and to consider the implications it may have for evaluating and improving the design of educational settings. To begin with, definitions of terms used in the discussion are given. The paper then proceeds to sketch research findings on academic achievement, affective development, and ethnic and socioeconomic consequences, and concludes by discussing the implications of research in these areas. (JW)

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Homogeneous and Heterogeneous Grouping: Principal Findings And Implications of a Re-search of the Literature*

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Given the assumption that the quality of an educational environment is directly related to the degree to which the experiences provided in that environment facilitate the achievement of specified educational objectives, the issue of whether ability grouping tends to enhance or reduce school learning experience is of particular educational significance. That is, if grouping students for instruction on the basis of performance on standardized reading, arithmetic, and I.Q. achievement tests tends to restrict the nature and quality of instruction that can be provided in the classroom, then regardless of some presumed educational or administrative advantage, the practice fosters an unsound environment for the education of children, and should be discontinued. If, on the other hand, evidence suggests that ability grouping tends to enhance the nature and quality of instruction than can be provided in the classroom, then the practice should be initiated or continued in the interest of maintaining quality education.[1]

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[1] Throughout this discussion all such standardized tests, whether of subject matter achievement, I.Q., or aptitude will be considered simply as different varieties of achievement tests. This terminology is intended to reflect that, functionally, the usual distinction between measures of aptitude and achievement, i.e., innate talent vs. learned talent, is not a meaningful and worthwhile division. In classifying I.Q. and other aptitude tests, as well as reading, arithmetic, and other subject matter tests as measures of individual achievement, the implication is that a score obtained on each of these instruments reflects an individual's level of knowledge or proficiency in a given subject or skill which, in turn, reflects an environmental and/or developmental end-product at a specific point in time and under particular conditions.

Initially, it may appear that a reconsideration of the evidence dealing with the issues related to the ability grouping debate is unlikely to broaden one's knowledge or alter one's position with respect to the relative merits of ability grouping practices. Certainly, educators and research investigators have read any number of studies and discussions addressed to the subject and undoubtedly have given careful consideration to the possible advantages and disadvantages of various ability grouping schemes of organizing administrators, teachers, and children into instructional units. However, notwithstanding the longevity of the debate, there are several reasons why a discussion of the principal findings of ability grouping research is appropriate at this time.

The first reason has to do with the incidence of homogeneous ability grouping in American education. Data recently reviewed by this investigator indicate that in thousands of elementary and secondary school classrooms across the nation, homogeneous grouping is a predominant method of organizing teachers and students into instructional units (NEA, 1961, 1962, 1966; Dean, 1960; Gore, et.al., 1965). In addition, large school systems tend to employ this pattern of organization more frequently and in higher proportion than do small school systems, and further, the practice is more and more prevalent as students proceed up the educational system and is likely to be more widespread in the near future. In short, given the popularity of this pattern of organization and the capacity of established systems to sustain and perpetuate existing policies and practices, it is hoped that a reconsideration of the data may not only

further educational research generally, but also serve educators who are interested in reevaluating the practice and/or developing alternative schemes of organization for the purpose of facilitating instruction.

The second reason has to do with issues related to the extent to which the implementation of various ability grouping schemes in relatively desegregated school settings conflicts with the principle of equal educational opportunity. A careful review of ability grouping research indicates that few studies have considered the educational relevance of ethnic and socioeconomic status in the placement of children into ability groups or curricular tracks, and that few have examined the social, economic, and political consequences of grouping schemes with respect to ethnic and socioeconomic separation of children. Rather, emphasis in the placement of children resides mainly in academic achievement, I.Q., and reading achievement levels (alone or in combination), while the consequences of grouping schemes are examined with respect to academic achievement, attitude, and personality development (NEA, 1968). Notwithstanding the relative absence of studies devoted to these issues, however, and given a continued national effort to desegregate public schools, existing data bearing on the relationship between ability grouping and de facto segregation in the public school classroom should be reviewed and interpreted in the interest of promoting the principle of equal educational opportunity.

Finally, there is a third reason which relates to the possible implications of more than fifty years of research devoted to ability grouping in dealing with the problem of evaluating the quality of educational environment. More specifically, in the interest of promoting concepts which can

be applied in evaluating and redesigning educational environments, the findings and interpretations of ability grouping practices should be reexamined with respect to the degree to which these patterns of organization facilitate the development and maintenance of activities on the part of teachers and students which are compatible with the achievement of specified educational objectives.

In short, it is not the purpose of this paper to engage in a detailed review of existing data concerning homogeneous and heterogeneous ability grouping, but to summarize the issues and principal findings of that research and to consider the implications it may have for evaluating and improving the design of educational settings. [2]

Definition of Terms

In public education, the term "grouping" has been a broad rubric subsuming a wide variety of organizational plans, selection criteria, instructional methodologies, and educational philosophies. Since the school has traditionally been defined by its group setting, methods have had to be devised to make the instruction of groups of children more effective and/or more manageable. The major options for vertical organization have been graded, multigraded, or nongraded (continuous progress) schools. Whichever of these plans is selected for a school,

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[2] For those interested in a detailed review of the research studies on the subject, see, Findley, Warren & Bryan, M. Ability Grouping: 1970. The Center for Educational Improvement, University of Georgia, Athens, Georgia, 1971.

a concomitant pattern of horizontal organization, which assigns pupils to teachers, rooms and curricular programs, must emerge (Goodlad, 1960).

Homogeneous grouping refers to the organization of instructional classes on the basis of students' similarity on one or more specific characteristics. The criterion for this classification may be age, sex, social maturity, I.Q., achievement, learning style, or a combination of these or other variables. Homogeneous ability grouping, therefore, is one of the many forms of homogeneous grouping, and generally refers to the use of standardized measures of intelligence, aptitude, or achievement in a given subject area in classifying students into separate ability categories and instructional class units.

Alternatively, if one is concerned with organizing instructional classes which reflect a rich mixture of children who differ on a variable or set of variables, a heterogeneous grouping plan can be implemented. Practically, heterogeneity may be achieved by either randomly assigning all children in a grade or school to instructional classes, or by deliberately assigning children to instructional classes such that a wide range of individual differences is present. Heterogeneous ability grouping therefore, refers to the organization of instructional classes such that a rich mixture of children who differ with respect to tested ability is assured.

It should be emphasized that, practically, the principles of homogeneous and heterogeneous grouping are essentially at opposite ends of the same yardstick. Inasmuch as truly homogeneous grouping can theoretically occur only with respect to nominal variables (e.g. sex), it seems evident that homogeneous grouping serves merely to restrict the range of individual

differences with respect to certain continuous or ordinal criterion dimensions (e.g., reading achievement, arithmetic achievement, I.Q. scores), while heterogeneous grouping tends to expand the range of individual differences on these dimensions.

The debate between proponents of heterogeneous versus homogeneous ability grouping has been, in effect, over the issue of which grouping plan results in better conditions for instruction. The theoretical rationale for homogeneous ability grouping, not necessarily based on research findings, generally includes the following points: homogeneous grouping takes individual differences into account by allowing students to advance at their own rate with others of similar ability, and by offering them methods and materials geared to their level; more individual attention from teachers is possible; students are challenged to do their best in their group, or to be promoted to the next level, within a realistic range of competition; and it is easier to teach to and provide materials for a narrower range of ability.

Alternatively, the usual arguments for heterogeneity include these: homogeneous grouping is undemocratic and affects the self-concept of all children adversely by placing a stigma on those in lower groups while giving higher-group children an inflated sense of their own worth; most adult life experiences do not occur in homogeneous settings, and students must learn to work with a wide range of people; students of lesser ability may profit from learning with those of greater ability; it is impossible to achieve truly homogeneous grouping, even along a single achievement variable, since test data are not generally reliable or valid enough for this type of distinction; homogeneous grouping may provide less sensitivity

to individual differences in children by giving the teacher the false sense that students are similar in social needs, achievement, and learning style, while heterogeneity permits different patterns of abilities and needs to emerge within a group of children; and finally, homogeneous ability grouping tends to segregate children along ethnic and socioeconomic lines as well as ability.

Further arguments can be put forth for either side of this controversy. One would have hoped that previous research in ability grouping would have clarified and settled some of these issues--certainly there have been a great many studies since the 1920's. However, the most recent and comprehensive review of these studies conducted by a task force organized by Findley (Findley and Bryan, 1971) suggests that this simply is not the case if one looks at consequent scholastic achievement. With respect to the consequences of homogeneous grouping as they relate to affective development and the distribution of children along ethnic and socioeconomic dimensions the evidence does suggest several trends which are no less than discouraging, particularly when interpreted within the framework of equal educational opportunity.

Research Findings: Academic Achievement

In summarizing the principal findings of ability grouping research, it would be useful to set the stage for an interpretation of the data by underscoring the caution which Goldberg, Passow, and Justman (1966) present in their book, The Effects of Ability Grouping. They point out that studies of ability grouping vary considerably in their range of objectives, on the

basis for determining "homogeneity," in duration, in adequacy of selection bases and means of matching experimental and control groups, in numbers of students involved, numbers of groups, size of classes, in specification of curricula and teaching methods, in instruments and techniques used in assessing changes in students, and in the development and training of teachers for various groups.

If it is assumed that the variables indicated above, either independently or in combination, affect student achievement, then not controlling for these variables in studies of ability grouping tends to minimize the difference in variance between or among ability groups, which tends to reduce the likelihood of finding statistically reliable differences. In addition, data reported by Esposito (1971) indicate that regardless of whether elementary school self-contained classrooms were organized according to the principle of a homogeneous or heterogeneous grouping format, the essential pattern of instruction and achievement manifested in the course of the teaching-learning process did not differ, and further, neither pattern of classroom organization per se, facilitated or resulted in the development of an individualized approach to instruction. With this perspective, then, it is not surprising to note that ability grouping as currently practiced produces: (a) conflicting evidence in promoting scholastic achievement in high or superior groups; (b) almost uniformly unfavorable evidence for promoting scholastic achievement in average groups; and (c) almost uniformly unfavorable evidence for promoting scholastic achievement in low ability groups. In short, among the studies showing significant effects, the slight preponderance of evidence favoring the

learning of high ability students is more than offset by evidence of unfavorable effects on the learning of average or below average ability groups, particularly the latter. In addition, there is no appreciable difference in the effects at the elementary and secondary levels. Taken as a whole, therefore, when the full range of ability groups in the homogeneously organized setting is compared with the full range of ability represented in the heterogeneously organized setting, the data are, at best, inconclusive and indefinite.

Notwithstanding these findings, several sources have identified factors other than ability grouping, and on the surface, more intrinsic to the teaching-learning process, which contribute to and possibly explain the reasons underlying improved scholastic performance. For example, the 1968 NEA Research Summary on ability grouping reported that when homogeneous grouping appeared to be more successful than heterogeneous grouping, the variables cited to explain the results related to the modification in educational objectives, curricular organization, teaching methodology, and teaching materials. Similarly, Otto (1941, 1950), Ekstrom (1959), Goodlad (1960), Wilhems and Westby-Gibson (1961), Franseth (1964), Goldberg et. al. (1966), Heathers (1969), and Passow (1970), all speak to the nature and content of the curriculum offered to children in trying to determine the correlates of scholastic performance. For the present, let us reserve further discussion of this important point, and turn instead to research findings which focus on the relationship between ability grouping and the affective, ethnic, and socioeconomic dimensions.

Research Findings: Affective Development

Ability grouping has probably been debated more frequently with respect to its emotional and social aspects than with respect to its effects on academic achievement. Many opinions have been put forth concerning emotional and social impact, but the research evidence, at least until very recently, has been rather thin, perhaps because emotional and social growth are more difficult to assess than are intellectual growth and scholastic achievement.

Just as there has been little uniformity of opinion regarding the effects of homogenenous and heterogeneous ability grouping on the social development of students, so has there been little agreement among findings reported as a result of research. However, while the literature includes at least some data to support almost any stand one might take on this issue, much of the evidence, especially the more recent evidence reported since 1960 (for example, Mann, 1960; Borg, 1966; Borg and Pepich, 1966; Lunn and Lunn, 1969; Lunn, 1970) seems insufficient to support the widely held opinion, or contention, that the grouping of children homogeneously according to ability contributes more to the development of desirable attitudes and positive self-concepts, especially among children classified as slow or of low ability.

On the current scene, then, the findings regarding the impact of homogeneous grouping on the affective development of children is that it tends to build or, more properly, inflate the self-esteem of children assigned to high ability groups, and to reduce the self-esteem of children assigned to

average and low ability groups. In addition, a somewhat intuitive but now documented dimension of the teaching-learning process, teacher attitude toward achievement, has been examined in terms of its impact on the personal, social, and intellectual development of elementary school age children. More specifically, Lunn (1970) documented that teachers assigned to classes organized heterogeneously and who bear attitudes of almost exclusive emphasis on academic achievement to the neglect of personal development, tend to exercise an especially pernicious influence on average and below average achieving children.

It is interesting to note that research addressed to the affective domain does not generally include descriptions or controls for the nature and content of the social experiences which are planned for children in the educational setting. Alternatively, research in the cognitive domain either includes some attempts to control for this set of variables, or in the absence of such control, is criticized for the oversight. However, in the few cases where this attempt is made in the affective domain, the data indicate relationships which tend to diminish the impact of homogeneous and heterogeneous grouping, per se, but rather suggests that variables intrinsic to curriculum (in its broadest sense) produce substantial impact. Once again, let us reserve further discussion of this important point until after a consideraion of the relationship between ability grouping and the distribution of children according to ethnic and socioeconomic status.

Research Findings: Ethnic and Socioeconomic Consequences

As indicated above, a careful review of ability grouping research has indicated that relatively few studies have considered the social, political,

and economic implications of ethnic and socioeconomic variables in the placement of children into self-contained homogeneously grouped instructional units or tracks, and that few have investigated the practical consequences of grouping policies on classroom composition with respect to ethnic and socio-economic segregation. There are a number of possible hypotheses to explain this omission.

One might argue, for example, that the question as to the effects of a particular grouping practice on ethnic and socio-economic separation is relevant only when the particular environment under study is ethnically and socio-economically integrated; that is, given a community, school district, or school that is overwhelmingly segregated, it makes little sense to study the practical effect of grouping method X in relation to these variables--not that the question of de facto segregation is irrelevant or that it should not be of concern to educators and researchers, but that it is not a researchable question in a self-contained, racially isolated environment.

Further, given the degree of correlation between ethnic origin and socio-economic class and performance on standardized measures of ability and achievement, it seems intuitively obvious, almost without the need for research, that a grouping practice which separates children according to performance on such measures predetermines the placement of a high proportion of non-white and lower socio-economic class children to the lowest homogeneous ability groups.

Notwithstanding these and other related possibilities, it has been suggested that the problem is probably more a result of a fundamental dilemma in the American social, political, and economic system: the isolation of certain ethnic and socio-economic groups from the mainstream

of a mixed society (Esposito, 1971). For example, as reported by the U.S. National Advisory Commission on Civil Disorders (1968), there were 21.5 million Black Americans in the United States in 1966. Fifty-five percent of this population lived in the South, sixty-nine percent lived in metropolitan areas, and nearly half lived in twelve major cities. As has been documented in several major sources, the inmigration of Blacks to the cities has been coupled with the outmigration of white city residents, and therefore, has come to mean resegregation of Blacks and Whites. However, even more serious is the finding that within school systems, the concentration of Blacks in individual schools tend to be far greater than their proportion in the total enrollment. As reported in Racial and Social Class Isolation in the Schools (1969):

> In 1965, in seventy-five major central cities, seventy-five percent of the Negro elementary pupils attended schools that were ninety percent or more Negro, while eighty-three percent of the white elementary children were in schools that were ninety-one percent or more white. These school systems were in both the North and the South, and the isolation of the Negroes held regardless of the proportion of Negroes in the total system.

These data tend to highlight a principal finding of the U.S. Commission on Civil Rights, reported in Racial Isolation in the Public Schools (1967):

> The causes of racial isolation in the schools are complex. It has its roots in racial discrimination that has been sanctioned and even encouraged by government at all levels. It is perpetuated by the effects of past segregation and racial isolation. It is reinforced by demographic, fiscal, and educational changes taking place in the Nation's metropolitan areas. And it has been compounded by the policies and practices of urban school systems.

Acknowledging that (a) homogeneous ability grouping as an educational policy is currently widespread in the nation's schools, (b) student performance on standardized tests are frequently used as the criterion for classifying children into separate ability groups, and (c) at the present time in history, ethnic and socio-economic class variables consistently tend to be associated with school achievement as measured by widely used standardized tests, how does homogeneous grouping stand up when examined in terms of its empirical relationship to the distribution of children along ethnic and socio-economic lines?

Careful review of data reported by Kariger, 1962; Mehl, 1965; McPartland, 1968; Mayeske, 1970; and extensive studies of school systems in two urban cities (i.e., Plainfield, N.J. and Washington, D.C.), clearly indicate that the practice of homogeneous ability grouping represents an educational policy which reinforces and, therefore, perpetuates ethnic and socio-economic class separation. In fact, due to the current relationship between socio-economic and ethnic status and student performance on currently used standardized tests, it may be concluded that in a relatively desegregated school environment, a decision to implement organizational structures based on the principle of homogeneous ability grouping will tend to distribute children such that the greatest disparity in socio-economic and ethnic representation exists in the highest and lowest ability groups, while the greatest comparability exists in the middle ability group range. Further, given (a) data presented

by McPartland (1968, 1969) showing that whatever superior achievement is demonstrated by minority children in desegregated schools is coupled with attendance in predominantly white (middle class) classroom groups, and (b) a growing body of evidence which indicates that as a direct consequence of the separation of children according to ability, ethnic, and socioeconomic status, a self-fulfilling prophecy is cultivated and systematically tends to restrict the range and quality of experience and opportunities that are potentially available given a rich mixture of children in an educational setting, it may be concluded that ability grouping, by design as distinguished from intent, discriminates against children from low socioeconomic classes and minority groups.

Summary of Findings

Taking all studies considered in the report prepared by the Findley Task Force on ability grouping (Findley and Bryan, 1971), the major finding of ability grouping research are essentially fourfold:

1. Homogeneous ability grouping as currently practiced shows no consistent positive value for helping students generally, or particular groups of students, to achieve more scholastically or to experience more effective learning conditions. Among the studies showing significant effects, the slight gains favoring high ability students is more than offset by evidence of unfavorable effects on the learning of students of average and below average ability, particularly the latter.

2. The findings regarding the impact of homogeneous ability grouping on affective development are essentially unfavorable. Whatever the practice does to build or inflate the self-esteem of children in the high ability groups is overbalanced by evidence of unfavorable effects of stigmatizing those placed in average and below average ability groups as inferior and incapable of learning.

3. Homogeneous ability grouping, by design, is a separative educational policy, ostensibly according to students' test performance ability, but practically, according to students' socioeconomic status and, to a lesser but observable degree, according to students' ethnic status.

4. In cases where homogeneous or heterogeneous ability grouping is related to improved scholastic performance, the curriculum is subject to substantial modification of teaching methods, materials, and other variables which are intrinsic to the teaching-learning process, and which, therefore, may well be the causitive factors related to academic development wholly apart from ability grouping per se. Similarly, with respect to social development, there is evidence which points to variables other than ability grouping which tend to relate substantially to children's personal growth or lack of growth.

Discussion and Implications

There are a number of dimensions on which one may evaluate the quality of an educational environment. In the history of education generally, chief among such dimensions has been student achievement of certain basic academic skills (e.g., reading and arithmetic). For more than five decades, educators and researchers generally have focused on these dimensions in evaluating ability grouping practices and have contributed a large body of data. More recently, a second dimension, social learning, has received research attention. Here, student attitudes and aspirations, personality development, adjustment to school, self-concept, etc. have been assessed with varying degrees of precision to determine the extent to which heterogeneous and homogeneous grouping practices contribute to the process of social development.

As reflected in the findings listed above, this approach to assessing the quality of an educational environment has contributed relatively little to

the expansion of knowledge about the ways in which grouping schemes, or more generally, the partial modification of the organizational structure of a school setting influences program conditions such that the chances of achieving specified learning outcomes are facilitated. The literature on ability grouping, for example, is replete with studies which attempt to investigate or demonstrate the extent to which a single variable or combination of variables descriptive of an individual at a specific point in time (e.g., intelligence, reading level, self-image, arithmetic level, etc.), affects or is related to that individual's academic and/or social development. However, there exists a paucity of studies which seek to investigate and explain in what ways and to what extent the structural properties of the school and classroom setting influences program conditions so as to cultivate or discourage patterns of instruction and behaviors which are manifested in the course of the teaching-learning process and which tend to be intrinsically related to the extent to which the objectives of instruction are achieved. More often than not, research conducted in the natural setting tends to (a) accept the existing structure and related program conditions of that setting without inquiring into whether, and to what extent these variables relate to the activities and behaviors of teachers and students engaged in the teaching-learning process, and (b) focus on the status of variables descriptive of individuals, at points <u>preceding</u> and/or <u>following</u> the actual activities and experiences (i.e., "program") which make up the teaching-learning process. This, clearly, is not to suggest or to imply

that the instructuional outcomes (e.g., knowledges and skills) which students develop in relation to some sequence of program events should not continue to be of concern to educators and researchers, but that the "results" which accrue to students are uninterpretable with respect to causality and therefore, (a) contribute little to an improved understanding of what specific attributes or combination of attributes of individuals and programs tend to produce the results, and (b) are of unknown value in redesigning more effective educational systems. In short, if the organizational properties and program conditions of an educational environment are related, and if the consequences of a child's passage through an educational environment involves the collective impact of multiple sources of influence which relate to these variables, then a continued focus on academic and social outcomes without attending to the ways in which these variables influence outcomes, will continue to be of minimum value in conceptualizing and implementing more effective educational systems.

Within this context, homogeneous and heterogeneous grouping plans may be conceptualized as unidimensional structural attempts to improve the general program conditions of instruction for individual and groups of teachers and students by adjusting the range of ability represented in the classroom. However, the evidence indicates that when self-contained classrooms or curricular tracks are organized according to either a heterogeneous or homogeneous grouping principle, the essential program conditions and consequent patterns of instruction which are manifested in the respective settings do not differ, and further neither

plan of organization provides for the educational opportunities and ingredients which are compatible with an individualized approach to instruction. More specifically, in addition to adjusting the range of ability represented in a class or curricular track, there are many other program conditions which relate to effective teaching and learning, but which are not generally provided for or attended to in either homogeneous or heterogeneous grouping schemes; namely, (a) the opportunity for frequent teacher-student contacts which tend to provide teachers with information about learners which could facilitate planning for individual pupil success; (b) flexibility in the use of the educational environment so that individuals or small groups of children have a greater opportunity to engage in activities more closely related to individual strengths and needs; (c) the opportunity for individual children to work and play in a variety of situations which involve other children, materials, and teachers, so that those responsible for the design of the curriculum may have the opportunity to observe the conditions under which a given child experiences social and scholastic success, and (d) the opportunity for small groups of teachers who are jointly responsible for the development of curriculum for a common group of children to plan together (on a continuous and frequent basis), so as to facilitate learning for individual children who present unresolved learning problems. Similarly, there are other conditions which influence the operation of effective programs, but which are not generally studied and incorporated into heterogeneous and homogeneous ability grouping. For example, the quality and frequency of administrative support and supervision; the nature and extent of teacher training opportunities to further develop competence; the nature and range

of instructional opportunities that the school can physically make available to teachers, students, auxiliary personnel, etc., all play a role in determining the extent to which effective teaching and learning can be achieved.

Quite obviously, educational systems which do not systematically provide for the prerequisite opportunities and ingredients mentioned above, or which are insensitive to the complex, dramatic, and subtle ways in which these variables interact and influence the activities which constitute the educational program, can hardly be expected to achieve patterns of teacher-student relationships which can successfully deal with the problem of helping teachers and students to discover and develop more effective approaches to teaching and learning. Most certainly, simply adjusting the range of ability to achieve homogeneity or heterogeneity in a given set of classrooms without dealing effectively with the above considerations, is likely to result in program conditions and patterns of instruction which not only are comparable across settings, but also do not improve the chances for teachers and students to discover more effective ways to facilitate learning.

In short, in the absence of any data which indicate that the practices of homogeneous and heterogeneous grouping are coupled with program conditions which change and improve the patterns of processes of teaching and learning, and in the presence of information which indicates, to the contrary, that simply adjusting the range of ability is not coupled with improved conditions for teaching and learning, many of the issues concerning the relationship between these grouping plans and student performance

and development are, at best, polemic, and at worst, meaningless. Moreover, given that students differ with respect to patterns of ability across subject areas, and that reliable and valid estimates of a student's ability do not necessarily determine the conditions under which a particular student is likely to experience success in learning new capabilities, the implicit logic governing the implementation of homogeneous and heterogeneous patterns of organization is suspect on both theoretical and practical grounds. Given this, it seems far more promising to shift research time, money, and manpower to developing and testing ways and means of establishing more effective educational systems which, by definition, support the maintenance of program conditions which encourage and reinforce activities on the part of teachers, students, parents, and administrators, which facilitate the achievement of specified instructional outcomes for individual children. Clearly, this framework would not necessarily require that instructional settings be organized to achieve the practical impossibility of homogeneity with respect to previous achievement, or aptitude, or ability. And hopefully, bringing together children who vary with respect to attitudes, learning styles, ethnic and socio-economic background, etc., within a structure which encourages flexibility in arranging instructional experiences, could serve as the foundation for innovative and successful approaches to improving and equalizing educational opportunity.

The immediate focus on the interrelationships among (a) the structural properties of an educational environment, (b) the program conditions existing within an environment, (c) the functional characteristics of teachers and students interacting under such conditions, and (d) the outcomes

of an educational system, calls for a somewhat different emphasis in understanding and explaining the behavior of teachers and students engaged in the instructional process. Inherent in the logic thus far is the assumption that the behavior manifested by teachers as well as students is partially determined by the program conditions and situations which are encouraged by the ways in which the school system, local school district, and classroom is structured. That is, the instructional settings within a given school-community environment consists of a highly ordered pattern of interrelationships which involves people, rules, objects and events which tend to encourage patterns of behavior in accordance with the dynamic patterning of that environment. The school-community-classroom environment, therefore, is here conceptualized to provide inputs with controls and conditions which tend to encourage and regulate the behavior of teachers, students, administrators, parents, etc., in accordance with (a) the systemic properties and requirements of the environment, and (b) the idiosyncratic attributes of its human components. The significance of these relationships is twofold. First, the same environment provides differential stimulation to different persons, and differential stimulation to the same person if his behavior changes. Second, the whole program of environmental stimulation tends to change if the structural and dynamic properties of the environment are altered (Barker, 1968). As is suggested above, this shift in emphasis in explaining the behavior of teachers and students implies alternative approaches to establishing, modifying and evaluating educational settings. These implications are at least fivefold:

1. If the instructional outcomes of the teaching-learning process are related to (a) the structural attributes of an educational environment, (b) the program conditions under which teaching and learning occurs, and (c) the functional characteristics of teachers and students interacting under such conditions, then three classes of objectives must be formulated in the design of an educational system. First, the instructional outcomes must be specified. Second, the program conditions judged most likely to support teacher and student activities which facilitate the achievement of the instructional outcomes must be developed and specified. Third, the structural organization judged most likely to encourage and support the program conditions must be specified. Essentially, therefore, in developing an educational system to help students achieve certain outcomes, the architects must be sensitive to and integrate the several levels of variables which interact in dramatic and subtle ways and influence the course of the teaching-learning process.

2. If the behaviors and patterns of instruction manifested in a given environment are judged inappropriate or contrary to the achievement of some set of instructional objectives, then the structural properties of the environment should be modified or replaced with a structure

or structures judged more likely to affect program conditions so as to cultivate and sustain practices which are more compatible with these objectives.

3. If the behavior of teachers, students, and administrators is functionally related to the program conditions and structural properties of the educational environment, then in part, such behavior should be considered in educational research as a dependent dimension manifested in relation to the conditions and contingencies operating within that environment. Obviously, this is not to suggest that all behavior or any single unit of behavior will not be manifested under disparate program and structural conditions. However, what is suggested is that in the absence of clear and definitive evidence to the contrary, the behavior of teachers, children (administrators, parents, etc.), should be considered, literally, as a relational phenomenon which is not, generally, independent of the structural properties and related program conditions which influence the teaching-learning process.

4. If the structural and program conditions of an educational environment are related to the patterns of behavior and activities manifested in the course of the teaching-learning process, then the relevant dimensions of these variables should be identified, described, and incorporated as integral factors in educational theory, practice, and evaluation.

5. If one is concerned with evaluating the quality of an educational environment, then assessment should not only be addressed to the degree to which instructional outcomes are achieved, but also to the nature and degree to which (a) specified structural and program conditions exist, (b) specified activity patterns are implemented, and (c) the "results" which accrue to students are related to (a) and (b) above. Essentially, therefore, if evaluation is to contribute substantively to the development of theory in instructional psychology, then the environmental factor must be differentiated along quantitative and qualitative dimensions and must be studied in relation to its "causitive" impact in the course of student development.

Before closing, the investigator should like to comment on the current status and predicted trends for the continued use of the homogeneous ability grouping structure in public school systems.

It is inconceivable that men and women who hold the policy-making powers for school districts, schools, and classrooms are totally unaware of the educational, social, political and separative consequences of homogeneous ability grouping. However, notwithstanding the evidence against this principle of organization, several recent surveys clearly indicate that homogeneous grouping on a national level is : (a) presently one of the predominant methods for organizing or classifying children into classroom units at both the elementary and secondary levels; (b) becoming more and more prevalent and is likely to be more widespread in the near future; and

(c) occurs more and more frequently as a child progresses each year through the elementary and secondary grades. The conclusion seems obvious. If one of the principal objectives of the American education system is to provide each child with an equal educational opportunity to maximize and develop his potential so that he may benefit himself, and thereby more effectively contribute to the larger society, then the present status and future trends with respect to homogeneous grouping suggest that this cardinal objective will not be realized. In a very real sense, the extent to which the current practice of ability grouping is permitted to exist in public schools represents the extent to which professional educators and governmental agencies sanction sub-quality education in a setting that is charged with the responsibility of developing each child to his fullest. It would seem that such an expectation is reason enough to put a halt to the practice. That the practice also tends to isolate children arbitrarily according to ethnic and socio-economic status and to discourage alternative thinking and flexibility in the design of more effective learning environments, compels professionals in government and education to eliminate the practice and turn attention to developing, testing, and implementing educational systems which provide the psycho-structural foundation to support more effective approaches to instruction. It is hoped that the interpretations and guidelines offered above will hasten the development and implementation of such systems.

REFERENCES

Barker Lunn, J.C. Streaming in the Primary School. London: National Foundation for Educational Research in England and Wales, 1970.

Barker, R.G. Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior. Stanford, California: Stanford University Press, 1968.

Bernstein, S. and D. Esposito. On Grouping in the Experimental Elementary School Project. Paper prepared for ERIC Information Retrieval Center for the Disadvantaged. Teachers College, Columbia University, November, 1969.

Borg, W.R. Ability Grouping in the Public Schools, Second Edition. Madison, Wisconsin: Dembar Educational Research Services, Inc., 1966.

Borg, W.R. and A. Pepich. Grouping of Slow Learning High School Pupils. Journal of Secondary Education, 41: 231-38, May, 1966.

Chin, R. The Utility of Systems Models and Developmental Models for Practitioners. In W. Bennis, et.al., The Planning of Change, (2nd ed.), New York: Holt, Rinehart, 1969, pp. 297-312.

Clark, K.B. Alternative Public School Systems: A Response to America's Educational Emergency. Washington, D.C.: U.S. Commission on Civil Rights, 1967.

Cohen, H.I. Behavioural Architecture. Architectural Association Journal, London, England, June, 1964.

Dean, S.E. Elementary School Administration and Organization. U.S. Department of Health, Education, and Welfare, Office of Education Bulletin. Washington, D.C.: Government Printing Office, 1960.

Eash, M.J. Grouping: What Have We Learned? Educational Leadership, 18: 429-34, Aptil, 1961.

Ekstrom, R.B. Experimental Studies of Homogeneous Grouping: A Review of the Literature. Princeton, New Jersey: Educational Testing Service, 1959.

Esposito, D. Structure and Function: A Behavioral and Systemic Interpretation. ERIC/IRCD Urban Disadvantaged Series, No. 20. Teachers College, Columbia University, May, 1971.

Findley, W.G. and M.M. Bryan. Ability Grouping: 1970, Status, Impact, and Alternatives. Center for Educational Improvement, University of Georgia, Athens, Georgia, 30601.

Franseth, J. A Guide to Research and Informed Judgment on Grouping Children, Educational Briefs No. 40. Washington, D.C.: Office of Education, U.S. Department of Health, Education and Welfare, May, 1964.

Goldberg, M.L. and A.H. Passow and J. Justman. The Effects of Ability Grouping. New York: Teachers College Press, Columbia University, 1966.

Goldiamond, I. A Research and Demonstration Procedure in Stimulus Control, Abstraction, and Environmental Programming. Journal of Experimental Analysis of Behavior. 7(3), 36-49, 1964.

Goodlad, J.I. Classroom Organization. In the Encyclopedia of Educational Research, Third Edition, C.W. Harris (Ed.), New York: The Macmillan Company, 1960, pp. 221-25.

Gordon, E.W. Equalizing Educational Opportunity in the Public School. IRCD Bulletin, 3(5), 1-5, 1967.

Gordon, E.W. and D.A. Wilkerson. Critic of Compensatory Education for the Disadvantaged. In E.W.Gordon and D.A. Wilkerson (eds.) Compensatory Education for the Disadvantaged. New York: College Entrance Examination Board, 1966, pp. 156-189.

Gordon, E.W. Education, Ethnicity, Genetics, and Intelligence. IRCD Bulletin, 5:4: 1, 2, 13, Fall, 1969.

Gordon, E.W. Qualitative Assessment of Learner Behavior and the Design of Learning Experiences. Paper presented at Teachers College Work Conference for Superintendents: Teachers College, Columbia University, July 7, 1971.

Gordon, E.W. Building Socially Supportive Environment, ERIC/IRCD Urban Disadvantaged Series. Number 16. Teachers College, Columbia University, June, 1970.

Gore, L.L. and R.E. Koury. A Survey of Early Elementary Education in Public Schools, 1960-1961. U.S. Department Of Health, Education, and Welfare, Office of Education, Circular No. 782. Washington, D.C.: Government Printing Office, 1965.

Haberstroh, C.J. Organization Design and Systems Analysis. In J.G. March (ed.), Handbook of Organization. Chicago: Rand McNally and Company, 1965, pp. 1171-1211.

Heathers, G. Grouping. In the Encyclopedia of Educational Research, Fourth Edition, R.L. Ebel (ed.), New York: The Macmillan Company, 1969, pp. 559-70.

Hirsh, J. Behavior-Genetic Analysis and Its Bisocial Consequence. IRCD Bulletin, 5:4: 3-4, Fall, 1969.

Holson v. Hansen. Congressional Record, June 21, 1967.

Institute of Field Studies, Teachers College, Grouping Students for Instruction in Plainfield, New Jersey School System. New York: Columbia University, July, 1969.

Kagan, J.S. Inadequate Evidence and Illogical Conclusions. Harvard Educational Review, 39: 274-77, Spring, 1969.

Kariger, R.H. The Relationship of Lane Grouping to the Socioeconomic Status of the Parents of Seventh-Grade Pupils in Three Junior High Schools. East Lansing, Michigan: Michigan State University, 1962. Abstract: Dissertation Abstracts, 23: 4586, June, 1963.

Lave, R.E. Jr, and D.W. Kyle. Application of Systems Analysis to Educational Planning, Comparative Education Review, 1968, 12, 39-56.

Lennon, R.T. Testimony of Dr. Roger T. Lennon as Expert Witness on Psychological Testing. New York: Harcourt, Brace and World, Inc.

Mann, M. What Does Ability Grouping Do to the Self Concept? Childhood Education, 36: 356-60, April, 1960.

Mayeske, G. and C.E. Wisler, A.E. Beaton, Jr. F.W. Weinfeld, W.M. Cohern, T. Okoda, J.M. Proshek, and K.S. Tabler. A Study of Our Nation's Schools. Washington, D.C.: Government Printing Office, 1969.

McPartland, J. The Relative Influence of School Desegregation and of Classroom Desegregation on the Academic Achievement of Ninth-Grade Negro Students. Journal of Social Issues, 25 (3): 93-102, Summer, 1969.

McPartland, J. The Segregated Student in Desegregated Schools: Sources of Influence on Negro Secondary Students. Baltimore, Maryland: John Hopkins University, June, 1968.

Mehl, R.F. Jr. A Study of Relationships Between Homogeneous Grouping in the School and the Social Class Structure in an Up- State New York Community. Albany, New York: State University of New York at Albany, 1965. Abstract: Dissertation Abstracts, 27: 4085-A, June, 1967.

Miles, M.B. The Development of Innovative Climates in Educational Organizations. Menlo Park, California: Stanford Research Institute, 1969.

National Education Association, Research Division. Administrative Practices in Urban School Districts, 1958-59. Research Report 1961-R10. Washington, D.C.: National Education Association, 1961.

National Education Association, Project on Instruction. The Principals Look at the Schools. Washington, D.C.: National Education Association, 1962.

National Education Association. Research Summary and Report. Washington, D.C.: National Education Association, 1956.

National Education Association, Research Division. Ability Grouping, Research Summary, 1968-53. Washington, D.C.: National Education Association, 1968.

New York State Education Department, Division of Research. Racial and Social Isolation in the Schools (Preliminary Report). Albany, New York: Office of Public Information, New York State Education Department, 1969.

Otto, H.J. Classification of Pupils. In the Encyclopedia of Educational Research, Second Edition, W.S. Monroe (ed.), New York: The Macmillan Company, 1950, pp. 376-78.

Otto, H.J. Elementary Education -- II, Organization and Administration. In the Encyclopedia of Educational Research, First Edition, W.S. Monroe (ed.), New York: The Macmillan Company, 1941, pp. 428-46.

Passow, A.H. (ed.), Education in Depressed Areas. Bureau of Publications, Teachers College, Columbia University, 1963.

Passow, A.H. Ability Grouping: What Have We Learned? TAG Gifted Children Newsletter, Vol. XIII, Number 2, 1971.

Pettigrew, T.F. Race and Educational Opportunity. Harvard Educational Review, Winter, 1968, 38, 66-76.

Pettigrew, T.F. and P.J. Pajoves. Social Psychological Considerations of Racially Imbalanced Schools. Boston: Massachussetts State Board of Education, 1965.

Society for the Psychological Study of Social Issues. Guidelines for Testing Minority Group Children. Prepared by a Work Group, J. Fishman, Chairman. Journal of Social Issues, 20:129-45, April, 1964.

St. John, N.H. Minority Group Performance Under Various Conditions Of School Ethnic and Economic Integration: A Review of Research. Cambridge, Massachussetts: Harvard University, 1968.

U.S. Commission on Civil Rights. Racial Isolation in the Public Schools, I and II. Washington, D.C.: Government Printing Office, 1967.

U.S. National Advisory Commission on Civil Disorders. Report of the National Advisory Commission on Civil Disorders. Washington, D.C.: Government Printing Office, 1968.

Weinberg, M. Desegregation Research: An Appraisal. Bloomington, Indiana: Phi Delta Kappa, 1968.

Wilhebus, F.T. and D. Westby-Gibson. Grouping: Research Offers Leads. Educational Leadership, 18: 410-13, 476, April, 1961.

Yates, A. (ed.) Grouping in Education. New York: Wiley and Sons, 1966.